Decreasing Costs in your Sterile Compounding Operation without Sacrificing Quality

Eric S. Kastango, MBA, RPh, FASHP
ClinicalIQ, LLC

© 2012 ClinicalIQ content, all rights reserved
Disclaimer

“Although I am a member of the USP Compounding Expert Committee, I am speaking today in my individual capacity and not as a member of the Committee or as a USP representative.

The views and opinions presented are entirely my own. They do not necessarily reflect the views of USP, nor should they be construed as an official explanation or interpretation of <797>.”
“The most dangerous kind of waste is the waste we do not recognize.”

– Shigeo Shingo (Toyota)
Today’s healthcare challenges and realities

- Chronic drug shortages
- Angry nurses, frustrated patients
- Not finding what you need to do your job
- Too much work and not enough people
- Correct procedures not being followed
- No time to train new employees
- Missing doses
- Wasted medications and rework
Good Quality can Cost Less

- The focus must be on reducing waste, improving quality and not on cost-cutting initiatives.
- The focus must be on the patient quality and safety.
- If you focus on quality, the costs will take care of themselves.
- Improve the system, rather than working harder.
- In order to make major changes, you need to start by making small improvements.
- Requires leadership and persistence.
Current push to reduce costs… but not ANY costs

- Select low hanging fruit first but be careful of rotten fruit
- Are any cost reductions, valuable cost reductions
- Example: Using nonsterile gloves in compounding to save ≈ 10K per year...that cost reduction does NOT improve quality and potentially increases risk of contamination/
Instead look at areas of waste

- Identification of the *real* waste is often more complex
- Cost reduction must also result in no change in quality or enhanced quality
- Example: Identification of ways to reduce waste of drugs that are expensive or in short supply
Lean Methods MUST ^ Quality while ↓ Cost

- Principles, concepts, & techniques used for elimination of waste.

- Create a process that gives customers:
  - exactly what they need,
  - when they need it,
  - in the quantity they need,
  - in the right sequence,
  - defect free, and
  - at lowest possible cost.
1. **Overproduction**: making too much or making it too early
2. **Waiting**: wait while something is being completed
3. **Transportation**: Moving items when not required
4. **Non-Value-Added**: Time and energy spent on activities that add no value
5. **Inventory**: Overproduction or overstocking of components of product
6. **Underutilization**: Waste of people not trained/used to fullest; also highly skilled staff doing work that could be done by others
7. **Defects**: Inspection and repair
8. **Motion/Handling**: Movement of people or machines that does not add value to the product or service.
Identify Wastes

Acronym: DOWNTIME

- **D**-defects
  - Clearly written SOPs for all activities to reduce/eliminate variation and chance of error. This is called “Standardized Work.”

- **O**-overproduction
  - Medication dispensing, CSP preparation and batch times
    - How many batch runs done daily?(Two, three, four, five?)
      - Problem: some doses may be prepared up to 18 hours in advance of anticipated administration
    - Resending missing doses-restocking
Identify Wastes

- **W**-waiting
  - Orders, medications processed and/or compounding, D/C’d CSPs to be returned to pharmacy

- **N**-non-utilized talent
  - Engage staff to identify opportunities to smooth the work out

- **T**-transportation
  - Look at the time it takes to deliver medications
    - Stat vs. routine delivery times
      - Pneumatic tubes, Dumbwaiter, Courier, tech or volunteer
    - Where are the medications being delivered?
      - Do the nurses know to look there?
  - Missing dose calls
Identify Wastes

- **I-inventory**
  - On-hand supplies and cost of goods

- **M-motion**
  - Staff spends time looking for orders, labels, leaving the IV room to get labels printed outside of room

- **E-extra processing**
  - Handling missing doses (labels, picking, compounding)
Areas of Pharmacy Waste: Motion

- Pharmacy layout and locate of drugs or printers
  - IV label printer located outside of cleanroom
  - Technicians walking miles per day to get commonly needed medications
- One batch-fill run per day vs. 2-6 runs per day
  - More frequent replenishment and more motion however medication availability, less missing dose calls

Areas of Pharmacy Waste: Overproduction

- Producing too many bags, too soon may end up wasting time and money
- Just-in-time (JIT) production is the opposite of massive amounts of anticipatory compounding.
- Are CSPs returned to the pharmacy, credited from the patient account and then destroyed?
  - Match demand with BUD and maximize drug dating
Areas of Pharmacy Waste: Overproduction

What is the dollar value of this waste?
Cost reduction must also result in:

• NO change in quality  
• ENHANCED quality
Instead of do it ahead, do it JUST IN TIME!

- Davis J. Use of Lean Production to Reduce Waste When Compounding Sterile Pharmaceuticals Products, Hosp Pharm 2009;(11) 44:974-977
  - Rework and waste reduced by 64%
  - Pharmaceutical expenditures reduced by $60,000
- Nationwide Children’s Hospital, Columbus, OH-publication pending
  - 12% waste of doses wasted daily
  - Implemented lean tools
    - Improved staff efficiency
    - Reduced waste by 48%
    - Realized annual savings of $426,000
Work Analysis-Heijunka (Production Leveling)

Number of IVs from Fill Batch by Time of Day and Day of Week

- SUN
- MON
- TUE
- WED
- THU
- FRI
- SAT

© 2012 ClinicalIQ content, all rights reserved
Work Analysis-Heijunka (Production Leveling)

Chemotherapy Dispenses By Time and Day

- Sunday
- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday

Number of Dispenses

Time

01:00 - 03:59
07:00 - 07:59
08:00 - 11:59
12:00 - 14:59
15:00 - 15:59
16:00 - 18:59
19:00 - 21:59
Without Consistency there can be NO Quality!

- Non standardization is a prime reason for waste
- Work practices not standardized
- Everyone uses their discretion
- No predictability
- Checks incorporated more frequently
- Checks ineffective since everyone does things differently
- Rework is increased
Quality Improvement

- Do you recognize this? ➡️
- Yes you do.
- Why?
- Because it looks and tastes the same at every location in every part of the world.

Quality Improvement can only realized by reducing process variability
Standardized Work

- The **current** one best way to **safely** complete an activity with the proper outcome and the highest quality, using the fewest possible resources.

- It is not absolute but the basis for kaizen (continuous improvement).

- All standardized work must benefit the patients, nurses, physicians, other team members and the hospital or place of employment.
People should analyze their work and define the way that best meets the needs of all stakeholders!

Pharmacy’s stakeholders:
- Other pharmacy department employees
- Nurses
- Physicians
- Patient

Requires strong and consistent leadership
- People respect what others inspect
- You get what you expect and you deserve what you tolerate
Can you say this about your PnPs?

- Are they well-written, detailed and incorporate all the regular, day to day aspects of work?
- Do staff know them? Embrace them? Use them as a guide? Consider them their own?
- Does your regular day to day documentation serve double duty as a data collection tool?
- Is documentation complete?

Do you notice? Do you care?
Policies and Procedures (continued)

- They **are not** just for show
  - Provide structure and planning for routine tasks
  - Reflects accumulated institutional knowledge
  - Critical for effective training of employees
    - The norm: Informal, verbal training called “verbal tradition”
  - Document everything that you want to happen
Policies and Procedures (continued)

- Not trying to turn employees into robots

- “Mindless conformity and the thoughtful setting of standards should never be confused. What solid Policies and Procedures do is nip common problems in the bud so that staff can focus instead on solving uncommon problems”

  –Bill Marriott, CEO of Marriott Hotels
## Compounding Methodology

<table>
<thead>
<tr>
<th>BATCH#</th>
<th>TIME PRINT</th>
<th>PERIOD</th>
<th>TAG BY:</th>
<th>CHECK BY:</th>
<th>TIME DELIVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0030</td>
<td>1000-1259</td>
<td>Night-shift</td>
<td>M-RPh</td>
<td>0800</td>
</tr>
<tr>
<td>2</td>
<td>0930</td>
<td>1300-1759</td>
<td>Day-shift</td>
<td>A-RPh</td>
<td>1100</td>
</tr>
<tr>
<td>3</td>
<td>1400</td>
<td>1800-2159</td>
<td>Day-shift</td>
<td>V-RPh</td>
<td>1530</td>
</tr>
<tr>
<td>4</td>
<td>1600</td>
<td>2200-0159</td>
<td>Eve-shift</td>
<td>V-RPh</td>
<td>1930</td>
</tr>
<tr>
<td>5</td>
<td>1800</td>
<td>0200-0659</td>
<td>Eve-shift</td>
<td>V-RPh</td>
<td>1930</td>
</tr>
<tr>
<td>6</td>
<td>2145</td>
<td>0700-0959</td>
<td>Eve-shift</td>
<td>M-RPh</td>
<td>0300</td>
</tr>
</tbody>
</table>
Predictable Cost Production Supplies

- Standardized work will allow for the identification of:
  - Employee garbing costs
  - Routine supplies needed to prepare batches of PN
    - # of tubing sets used
    - Optimize the use of source containers
Eliminate Waste: Create Plan and Implement

- Use an rapid action items list (RAIL)
  - Prioritize based on
    - Cost
    - Difficulty
    - Leverage
    - Timeliness
- Work the plan
- Kaizen Blitz
  - Short, sustained activity around process improvement
  - The results are immediate, dramatic and satisfying
Expanded Production Capabilities

- By eliminating work that does not add value, cycle time can be reduced.
- When waste is reduced, then time to make a “batch” is reduced.
- Organization is more flexible and can respond to expanded demand more quickly.
- Lean business analysis will help you get maximum throughput with minimum resources.
Efficient Collection of Quality Management Data

- Identify Key Performance Indicators (KPIs) and the required benchmark data to measure.
- Capture data in documentation (whether on paper or in software program) at the time it occurs.
- Allows streamlined benchmarking and measurement.
- No “special” audits needed…automate the measurement.
Predictable outcomes

- Efficient employees meeting patient needs in a timely manner
- Predictable volumes that can be matched with appropriate staffing
- Reduced waste and rework
- Ensures that the right medication in the right dose is available in the right (and predictable) places when needed at the right time
Increased Job Satisfaction

- Staff know where to get information
- Know what to expect
- Improved staff retention
- Enhanced ability to recruit qualified staff
“The most valuable of all talents is that of never using two words when one will do.”

– Thomas Jefferson
Resources:

- Lean Enterprise Institute Website: http://www.lean.org/
- Pharmacy Advisor Website: http://www.pharmacyadvisor.com/
- Hospital pharmacy savings achieved through lean management practices: http://drugtopics.modernmedicine.com/drugtopics/Modern+Medicine+Now/Hospital-pharmacy-savings-achieved-through-lean+management/article?ArticleID=689874
Thank you

My contact information:
Eric S. Kastango, MBA, RPh, FASHP

Clinical IQ, LLC
235 Main Street, Ste 292
Madison, NJ 07940
973.765.9393

Eric.kastango@clinicaliq.com
www.clinicaliq.com